National Institute of Environmental Health Sciences

Vulnerability of Korean water resources to climate change and population growth

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Abstract:

Freshwater availability is affected by changes in climate and growth. We assessed the freshwater vulnerability for five major Korean river basins for 2015 and 2030. We used a regional climate model based on the IPCC SRES A2 scenario, US Geological Survey's Precipitation Rainfall Simulation Model, and population and industrial growth scenarios for impact assessment. The model simulation results suggest increasing spatial and temporal variations of water stress for the basins that are already developed. While freshwater is more vulnerable to growth scenarios than the climate change scenario, climate change alone could decrease mean annual runoff by 10% in four major river basins by 2030. As the first national assessment of climate change, we suggest possible adaptive water resource management and policy strategies for reducing climate related risks in Korea.

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Resource Description

Climate Scenario : ☑

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES)

Special Report on Emissions Scenarios (SRES) Scenario: SRES A2

Communication: ☑

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☑

audience to whom the resource is directed

Policymaker

Other Communication Audience: Water resource managers

Exposure : ☑

weather or climate related pathway by which climate change affects health

Food/Water Security, Precipitation, Temperature

Geographic Feature:

resource focuses on specific type of geography

Freshwater

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: Korea

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Medium-Term (10-50 years)

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content